Digital Vulnerability of Consumers in the World of Smart Contracts – Is European Private International Law "Digitalised" Enough?

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A. Introduction

This contribution deals with consumer smart contracts in the context of European Private International Law (EU PIL). The concept of smart contracts is not new and has its roots in the 1990s, but it has regained prominence with the development of blockchain technology in the context of cryptocurrencies.[1] Although blockchain is not a necessary precondition for smart contracts, as the concept can also function through other electronic means, this contribution will focus on smart contracts based on blockchain technology.[2] In the simplest terms, smart contracts can be defined as computer programs based on code that contain predefined obligations that are automatically performed. This represents a significant difference compared to traditional contracts written in natural language.[3] Smart contracts operate based on conditional logic rules. The algorithm's operation is programmed with "if" and "then" conditions, meaning that when a previously established condition is met, the smart contract automatically performs a predefined action that has also been programmed in advance.[4] Automation, as a characteristic of smart contracts, in a legal sense, eliminates the need

1 Mateja Đurović, "What are smart contracts? An attempt at demystification" in Zvonimir Slakoper and Ivan Tot (eds), *Digital technologies and the law of obligations* (Routledge 2022), 123.

2 Antonio Davola and Roberto Pardolesi, "What is Wrong in the Debate about Smart Contracts" (2020) 9(5) Journal of European Consumer and Market Law 201, 205.

3 Florian Möslein, "Smart contracts and civil law challenges: Does legal origins theory apply?" in ByIris Chiu and Gudula Deipenbrock (eds), *Routledge Handbook of Financial Technology and Law* (Routledge 2021), 30; Mateja Đurović and Chris Willett, "A legal framework for using smart contracts in consumer contracts: Machines as servants, not masters" [2023] MLR 1, 5-6.

4 Olaf Meyer, "Stopping the Unstoppable: Termination and Unwinding of Smart Contracts" (2020) 9(1) Journal of European Consumer and Market Law 17, 17-18.

for trust between parties. Transactions are conducted automatically and autonomously without the possibility of unilateral changes or manipulation.[5] Furthermore, as an additional benefit of smart contracts, lower transaction execution costs can be mentioned because smart contracts eliminate the need for intermediaries, such as courts or lawyers, as the performance of obligations is automated.[6]

However, it is important to mention certain risks associated with smart contracts. It is possible that the automatic execution of a smart contract does not correspond to previous agreements between the contracting parties made outside the blockchain. Also, due to the rigidity of contract automation, parties may be unable to modify the terms in the smart contract later due to changed circumstances.[7] Given the automation above as a critical characteristic of smart contracts, there is inevitably a digital vulnerability for consumers arising from the likely lack of understanding of new technological concepts for the majority of consumers due to the imbalance in technological and legal knowledge, as well as the economic power between consumers and professionals in the digital marketplace.[8]

While there are numerous substantive discussions about whether smart contracts are legally binding agreements in contract law, this contribution will focus on issues related to European Private International Law (EU PIL) without assessing the validity or invalidity of smart contracts in terms of contract law. Therefore, the main research question in this paper is whether EU PIL provides an adequate legal framework in the context of international jurisdiction and conflict of laws rules for smart consumer contracts. This leads to the following sub-questions: Do the obligations defined and/or performed by smart contracts fall within the scope of EU PIL instruments for contractual relationships? Can the contracting parties in a smart contract define a choice of court or law clause, and in the absence or invalidity of such a choice, which court is competent or which law applies to smart consumer contracts?

5 Maren K. Woebbeking, "The Impact of Smart Contracts on Traditional Concepts of Contract Law" (2019) 10(1) JIPITEC 106, 107.

6 Saša Nikšić, "Očitovanje volje i suvremene informacijske tehnologije" in Marko Baretić and Saša Nikšić (eds), *Zbornik treće regionalne konferencije o obveznom pravu* (Pravni fakultet Sveučilišta u Zagrebu 2022), 44.

7 Oscar Borgogno, "Usefulness and Dangers of Smart Contracts in Consumer Transactions" in Larry A DiMatteo *et al* (eds), *The Cambridge Handbook of Smart Contracts, Blockchain Technology and Digital Platforms* (CUP 2019), 292-293.

8 BEUC, *EU consumer protection 2.0: Structural asymmetries in digital consumer markets* (Joint report, 2021), 5.

In light of the above, this contribution sets two research objectives. First, it is essential to determine whether disputes arising from "smart contractual relationships" exhibit the characteristics of "civil and commercial matters" within the meaning of the Brussels Ibis Regulation[9], and whether such relationships entail contractual obligations within the scope of the Rome I Regulation[10]. Furthermore, if it can be considered that smart contracts fall within the scope of the aforementioned EU PIL regulations, it is necessary to establish whether smart contracts, as a digital phenomenon, fit into the existing framework of EU PIL concerning the application of specific rules for determining international jurisdiction and the applicable law in business-to-consumer transactions (B2C). Since smart contracts are based on blockchain technology, which enables transactions between people worldwide, questions of the localisation of legal relationships are of utmost importance for private international law.

In this contribution, an overview of the characteristics of blockchain technology and the concept of smart contracts based on it will first be briefly presented. Subsequently, the characterisation of smart contracts in the context of EU PIL will be carried out in terms of international jurisdiction and conflict-of-law protection for consumers as the weaker party. Finally, the conclusion will address the previously posed research questions.

B. Setting the scene of smart contracts

As previously stated, this contribution addresses legal issues related to smart contracts based on blockchain technology in the context of EU PIL. However, before further analysing the characteristics of smart contracts, it is advisable to begin by explaining the features of blockchain technology as the technological foundation of smart contracts.

Blockchain technology is based on Distributed Ledger Technology (DLT), a broader concept consisting of interconnected computers or nodes. These nodes function to identify users and verify transactions cryptograph-

9 Regulation (EU) No 1215/2012 of the European Parliament and of the Council of 12 December 2012 on jurisdiction and the recognition and enforcement of judgments in civil and commercial matters (recast) [2012] OJ L 351 (Brussels Ibis Regulation).

10 Regulation (EC) No 593/2008 of the European Parliament and of the Council of 17 June 2008 on the law applicable to contractual obligations [2008] OJ L 177 (Rome I Regulation).

ically.[11] The EU has provided a normative definition of DLT through several legal acts. In EU law, DLT is defined as a technology that enables the operation and use of a data repository that records transaction data. This data repository is distributed among a network of nodes and is synchronised among these nodes through a consensus mechanism.[12] DLT is an encrypted database containing a ledger to record participant transactions.[13] The purpose of DLT is to facilitate the sharing and updating of information in a distributed and decentralised manner. This involves interconnected computers functioning as nodes, which can be geographically located anywhere in the world.[14] This poses new challenges for private international law. One of the key characteristics of DLT is the absence of a central authority or intermediary that oversees or manages the system. Instead, this role is carried out by the networked computers or nodes, highlighting the decentralisation of the database.[15]

Building upon the previous discussion regarding DLT, blockchain technology is subsequently introduced, and it has gained broader attention due to the emergence of cryptocurrencies. The blockchain protocol consists of interconnected computers or nodes that cryptographically identify participants and verify their transactions before recording them in the system. Participants in blockchain transactions are identified using cryptographic keys. These keys include a public key that serves as a publicly visible ad-

11 Jura Golub, "Characterisation of Cryptoassets as a Separate Category of Digital Assets" in Ivana Kunda *et al* (eds), *Balkan Yearbook of European and International Law 2022* (Springer 2023) 196-197.

12 Regulation (EU) 2022/858 of the European Parliament and of the Council of 30 May 2022 on a pilot regime for market infrastructures based on distributed ledger technology, and amending Regulations (EU) No 600/2014 and (EU) No 909/2014 and Directive 2014/65/EU [2022] OJ L 151, arts 2(1) and 2(2); Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 [2023] OJ L 150, arts 3(1)(1) and 3(1)(2).

13 Francisco J. Garcimartin Alferez and Sara Sanchez, "Is private international law tech-proof? Conflict of laws and FinTech: selected issues" in Thomas John *et al* (eds), *The Elgar Companion to the Hague Conference on Private International Law* (Edward Elgar Publishing 2020) 407.

14 Robin Hui Huang, *Fintech Regulation in China: Principles, Policies and Practices* (CUP 2021), 98; Kelvin F. K. Low and Eliza Mik, "Pause the Blockchain Legal Revolution" (2020) 69(1) International and Comparative Law Quarterly 135, 137.

15 Low and Mik (n 14) 137.

dress and a private key, a password known only to the specific participant.[16] Each blockchain node manages a full copy of the verified transactions in the blockchain ledger. Packets containing recorded transaction data are referred to as blocks. Each block is linked to the next block using cryptographic signatures, creating a chain. This feature enables the blockchain to function as a ledger that can be accessed with appropriate permissions. Since all transactions are recorded in all nodes, transactions always leave an immutable trace, and data cannot be altered, as is the case when data is stored only by a central intermediary.[17]

Finally, it is necessary to highlight the differentiation of blockchain manifestations. The fundamental division of blockchain is into public and private forms. In a public blockchain, anyone can participate without fulfilling specific prerequisites, and participants are generally of unknown real identity.[18] On the other hand, a private blockchain can only be accessed by specific individuals who meet certain requirements for participation on a particular blockchain platform, and their identity can be determined either by other participants or by a gatekeeper who verifies whether an individual meets the prerequisites for participation in the private blockchain.[19] Furthermore, concerning the permission level, public and private blockchains can be permissionless, where all participants are authorised to execute transactions, or they can be permissioned, where only certain blockchain participants are authorised to execute transactions.[20]

Building upon the explanation of DLT and blockchain technology, the concept of smart contracts is introduced. Smart contracts, as computer programs that contain programmed contractual obligations and/or instructions for performing obligations in the form of computer code, are recorded on a blockchain network (such as Ethereum) and are automatically executed when a triggering event occurs, without the need for human intervention in performing the obligations.[21]

16 Alferez and Sanchez (n 13) 407.

17 Hague Conference on Private International Law, *Developments Concerning PIL Implications of the Digital Economy* (Prel. Doc. No 4 REV of January 2022) para 14.

18 European Law Institute, *ELI Principles on Blockchain Technology, Smart Contracts and Consumer Protection* (Report, 2023), 23.

19 ibid 28.

20 ibid.

21 Law Commission, *Smart legal contracts, Advice to Government* (Law Com No 401, 2021), paras 2.28 - 2.29.

While it is common for smart contracts to be used solely to perform obligations from a contract written in natural language, it is also possible for smart contracts to be used for entering into legally binding contracts.[22] Given this dual functionality, smart contracts can be classified into two categories. The first category consists of smart contracts, where the code of a computer program executes the automated performance of contractual obligations. In this case, the smart contract serves solely as a means of performance obligations defined in an "external" contract, entered into in natural language.[23] Such smart contracts will be called "off-chain" smart contracts in this contribution. On the other hand, there is a type of smart contract in which the contractual terms are defined in the code of a computer program, and the obligations are also automatically performed by the algorithm, but there is no external version of the underlying contract in natural language.[24] Such a smart contract that exists exclusively in the blockchain environment will be referred to in this contribution as an "on-chain" smart contract.

Furthermore, there is an additional third type of smart contract in which the blockchain functions as an autonomous party that enters into a contract with another contracting party without specific human approval and automatically executes it.[25] In this case, it involves an artificial intelligence (AI) agent that accepts an offer or autonomously creates a counteroffer on behalf of its principal.[26] This type of smart contract concluded through an AI agent, is considered particularly suitable for consumer contracts because autonomous generation allows adaptation to individual consumer needs.[27]

Forming a smart contract involves the offeror writing the contract terms in a specific programming language and posting the written contract on a particular blockchain platform as an offer.[28] The offer is followed by another participant's acceptance of the offer on the blockchain, which can

22 Đurović and Willett (n 3) 1.
23 Law Commission (n 21) para 2.51.
24 ibid.
25 Đurović Mateja and Janssen André, "Formation of Smart Contracts under Contract Law" in Larry A DiMatteo, Michel Cannarsa and Cristina Poncibò (eds), *The Cambridge Handbook of Smart Contracts, Blockchain Technology and Digital Platforms* (CUP 2019) 66.
26 Woebbeking (n 5) 110.
27 ibid 110.
28 Andre Janssen , "Smart Contracting And The New Digital Directives: Some Initial Thoughts" (2021) 12 JIPITEC 196, 199.

be manifested by performance (e.g., making a cryptocurrency payment), or the intention to accept the offer can be indicated by approval through a private cryptographic key.[29] When the offer and acceptance are thus combined, the smart contract automatically performs the obligations according to the pre-programmed parameters.

The potential practical applications of smart contracts in consumers' everyday lives are numerous. Examples include smart contracts in car rentals, where the car can be used as long as the fees are paid, and automatic locking prevents further use if the payments are not made. They can also be applied to utility services (gas, electricity, water), where the supply of services continues as long as the obligations to the service provider are met. Additionally, they can be used in supply chains, enabling automatic reordering of groceries as soon as certain items are depleted in the consumer's household.[30]

C. Do smart consumer contracts fall within the framework of EU PIL?

Before further considering the issues of jurisdiction and applicable law in the context of smart contracts, it should be emphasised that only some legal relationships related to smart contracts between a professional and a consumer will necessarily lead to applying EU PIL rules. The fact that a smart contract is based on blockchain technology, with nodes dispersed worldwide, does not automatically mean that the legal relationship has an international element.[31] For a legal relationship to be characterised as international, there must be a subjective or objective element connecting the legal relationship to a specific foreign legal system.[32] In the case of smart contracts, it is possible to have a B2C transaction between a professional and a consumer from the same country, which is not relevant from the perspective of EU PIL. However, considering the characteristics of blockchain

29 Dino Gliha and Sandra Marković, "Smart Contracts and Human Rights" in Zvonimir Slakoper and Ivan Tot (eds), *Digital technologies and the law of obligations* (Routledge 2022), 174.

30 Janssen (n 28) 200.

31 European Law Institute (n 18) 28.

32 Julia Hörnle and Ioannis Revolidis, "Civil and Commercial Cases in the EU: Jurisdiction, Recognition, and Enforcement, Applicable Law—Brussels Regulation, Rome I and II Regulations" in Julia Hörnle (ed), *Internet Jurisdiction Law and Practice* (OUP 2021), 269-270.

technology, it would be opportune to assess each legal relationship related to smart contracts under the presumption that there is an international element.[33] Therefore, in this contribution, further discussions of smart consumer contracts are placed in the context of EU PIL, assuming the existence of an international element.

As a protective category of contracts, the Brussels Ibis Regulation and the Rome I Regulation for consumer contracts establish special rules regarding international jurisdiction and conflict of laws to protect consumers as the weaker party to the contract. The purpose of having specific rules for consumer contracts is to address the vulnerability of consumers due to their specific position in the legal relationship compared to the other contracting party, which is typically a professional. Generally, the weaker party is considered in a subordinate position or exposed to greater vulnerability.[34] From the perspective of EU PIL, consumers are considered particularly vulnerable in a legal relationship due to information asymmetry regarding the content of applicable law and the rules for determining the competent court. They also face social and economic subordination in relation to the professional.[35] In addition to protecting consumers as the weaker contracting party, these special rules on jurisdiction and conflict of laws aim to ensure predictability in legal relationships.[36]

The Brussels Ibis Regulation is applied for determining jurisdiction and the recognition and enforcement of judicial decisions in civil and commercial matters, except for those matters that are explicitly excluded from the scope of application of this Regulation. Its counterpart, the Rome I Regulation, is applied in cases of conflict of laws regarding contractual obligations in civil and commercial matters, and its application is also excluded in certain matters.[37] Therefore, regarding smart consumer contracts, the following questions arise: Do the obligations defined and/or performed by automated smart contracts fall within the concept of "civil and commercial

33 Luís de Lima Pinheiro, "Laws Applicableto International Smart Contractsand Decentralized Autonomous Organizations (DAOs)" (2023) 3(1) International Journal of Cryptocurrency Research 16, 20.

34 Ilaria Pretelli, "A focus on platform users as weaker parties" in Andrea Bonomi *et al* (eds), *Volume XXII Yearbook of Private International Law – 2020/2021* (Verlag Dr. Otto Schmidt 2021), 214.

35 Giesela Rühl, "The Protection of Weaker Parties in the Private International Law of the European Union: A Portrait of Inconsistency and Conceptual Truancy" (2014) 10(3) Journal of Private International Law 335, 343-345.

36 Geert van Calster, *European Private International Law* (Hart Publishing 2013), 134.

37 Brussels Ibis Regulation, art 1; Rome I Regulation, art 1(1)(2).

matters," and can they be considered "contractual obligations" within EU PIL?

At the outset, it is essential to emphasise that the terms contained in the corpus of EU PIL for contractual obligations have an autonomous meaning. They must be interpreted independently of national concepts to ensure uniform application across all Member States, irrespective of their national law.[38] Given that this contribution aims to examine aspects of international jurisdiction and conflict-of-law protection for consumers in the context of smart contracts, relevant provisions of the Brussels Ibis Regulation and the Rome I Regulation, although serving different purposes, are interpreted as connected to achieve consistency.[39]

The concept of "civil and commercial matters" should be understood broadly, covering all principal civil and commercial matters. This is achieved by distinguishing between public and private law.[40] The decisive criterion for distinguishing them is the exercise of public power, meaning the ability of one of the parties in a legal relationship to exercise public power, which is otherwise not permitted to private persons.[41] This demarcation can also be applied to relationships related to smart contracts, whether they are concluded off-chain or on-chain. The parties' legal positions will be assessed in these relationships, determining whether one party exercises public power over the other. If that is the case, such a legal relationship does not fall under the scope of EU PIL instruments for contractual relationships.

According to the Court of Justice of the European Union (CJEU), the concept of "contractual obligations," or as Article 17(1) of Regulation Brussels Ibis states for consumer contracts, "matters relating to a contract," should be understood to encompass all legal relationships in which one contractual party voluntarily assumes an obligation towards another party.[42] It is important to note that, for the application of Regulations Brussels Ibis and Rome I, a contract is not even necessary to be concluded. These regulations apply in any situation where it is possible to identify

38 Case C-419/11 *Česká spořitelna, a.s. v Gerald Feichter* [2013] ECLI:EU:C:2013:165, para 45.

39 Rome I Regulation, recital 7.

40 Martin Illmer *et al*, "Scope and Definitions" in Andrew Dickinson and Eva Lein (eds), *The Brussels I Regulation Recast* (OUP 2015), 61-62.

41 Hörnle and Revolidis (n 32) 269.

42 Case C-26/91 *Jakob Handte & Co. GmbH v Traitements Mécano-chimiques des Surfaces SA* [1992] ECR 1992 I-03967, para 15.

the existence of a specific obligation, except if such an obligation falls within the scope of specific matters that are excluded from the application of Regulation Brussels Ibis or Rome I.[43] Furthermore, the mutuality of obligations is irrelevant when defining the concept of a "contract" under EU PIL. The term "contract" and the scope of EU PIL instruments equally cover unilateral and bilateral legal transactions.[44]

If we consider the way on-chain smart contracts are formed, it is evident that even in the case of such a digital phenomenon, there is an act of freely assuming obligations, whether unilateral or bilateral. The offeror places the contract terms on the blockchain platform, while on the other side, the offeree expresses willingness to enter into the contract either by using a private cryptographic key or simply performing the obligations.[45] Therefore, there is a voluntary assumption of obligations, and accordingly, on-chain contracts fall within the scope of the application of the EU PIL for contractual obligations. However, this still does not mean that such contracts are valid. Every contract, including a smart contract, will be legally binding only if the legal effect is recognised by the applicable law to which the conflict of laws rules refer.[46]

In assessing the character of obligations arising from off-chain smart contracts as "contractual obligations," there should not be significant obstacles, considering that the obligation is accepted outside the blockchain system in natural language. In such cases, the nature of the obligation as a "contractual obligation" is assessed as with any other traditional contract, and the automatic performance of the obligation through a smart contract is just one aspect of the external underlying contract.

After defining the concepts of "civil and commercial matters" and "contractual obligations," it is necessary to consider the criteria of the relevant EU PIL regulations regarding characterising a specific contract as a consumer contract.

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43 Case C-419/11 *Česká spořitelna, a.s. v Gerald Feichter* [2013] ECLI:EU:C:2013:165, para 46.

44 Case C-180/06 *Renate Ilsinger v Martina Dreschersa* [2009] ECR 2009 I-03961, para 51.

45 Đurović and Janssen (n 25) 67-68.

46 Florence Guillaume, "Aspects of private international law related to blockchain transactions" in Daniel Kraus *et al* (eds), *Blockchains, Smart Contracts, Decentralised Autonomous Organisations and the Law* (Edward Elgar Publishing 2019), 68; Rome I Regulation, arts 10(1) and 11(4)(5).

Regulations Brussels Ibis and Rome I define legal relationships that similarly fall within the scope of protective rules for consumer contracts concerning jurisdiction and applicable law. According to the relevant Regulations, consumer contracts are defined as contracts concluded by a consumer as a natural person for a purpose outside his/her trade or profession with another contracting party acting within his trade or profession, i.e., with a professional under one of the following conditions: 1) the professional conducts his commercial or professional activities in the state where the consumer has his/her habitual residence/domicile, or 2) the professional directs such activities to that state or several states by any means, including that state, and the contract falls within the scope of those activities.[47] Additionally, Regulation Brussels Ibis extends the protective jurisdiction for consumer contracts to include contracts for the sale of goods with deferred payment of the price and contracts for credit sales or any other form of credit agreements concluded to finance the sale of goods, provided that the consumer has concluded such contracts for non-professional purposes.[48]

From those above, the following characteristics of a consumer can be summarised. The concept of a "consumer" is objective and entirely irrelevant to the subjective characteristics of a specific natural person regarding his/her specific knowledge and information.[49] Therefore, the characteristic of a consumer is examined solely in terms of the individual's position in a specific contractual relationship, taking into account the nature and purpose of such a legal relationship, where the consumer must enter into the contract for non-professional purposes to satisfy individual needs.[50] In the context of smart contracts, the specific technological, legal, or other knowledge of the consumer is irrelevant as long as such a contractual relationship meets the objective criteria for qualifying a particular contract as a consumer contract.

Regarding the nature of on-chain contracts and the possibility of concluding the external underlying contract at a distance, even in the case of off-chain contracts, the question arises from the professional's perspective of recognising that the other party is acting on the market as a consumer. In this case, everything is in the eyes of the professional, as protective con-

47 Brussels Ibis Regulation, art 17(1)(c); Rome I Regulation, art 6(1).
48 Brussels Ibis Regulation, art 17(1)(a)(b).
49 Case C- 774/19 *A. B. and B. B. v Personal Exchange International Limited* [2020] ECLI:EU:C:2020:1015, para 38.
50 ibid, para 39.

sumer provisions will not apply to a natural person who would generally meet the consumer criteria if such a person, through his/her behaviour with the professional, has given the impression of acting for business purposes, and the professional could not reasonably have known about the private purpose of the delivery.[51] The CJEU has provided several useful indicators to identify such a situation, such as ordering goods that can be used for business purposes, using business equipment, delivering to a business address, or mentioning the possibility of a VAT refund.[52]

However, what raises certain questions are the localisation conditions for the professional's activities, especially the second criterion related to directing commercial activities. In contrast to the first alternative condition, which requires that the professional carries out commercial or professional activities in the country/state where the consumer has his/her habitual residence or domicile, there will generally be no difficulty in recognising such a circumstance. This situation applies when the professional is present in the country/Member State where the consumer has his/her habitual residence or domicile and receives orders from consumers in that area.[53] This is confirmed by German case law. In a specific case, a branch of a French bank in Germany rented a battery for charging an electric vehicle to a German consumer, and the general terms of the contract contained a provision allowing the professional to disable further battery charging in case of contract termination remotely. In this case, the courts characterised the legal relationship as a consumer contract, invoking Article 6 of the Rome I Regulation and Article 18 of the Brussels Ibis Regulation, which established the jurisdiction of the German court and the application of German law as the applicable law. The court also noted that it is entirely irrelevant whether the remote disabling of battery charging is a consequence of automatic blockchain action or the action of an employee.[54]

As mentioned, the situation is somewhat less clear regarding the second alternative condition, which consists of the professional "directing his commercial or professional activities by any means" to the country/Member

51 Case C-464/01 *Johann Gruber v Bay Wa AG* [2005] ECLI:EU:C:2005:32, paras 51 and 53.

52 ibid, para 52.

53 Michael Wilderspin, "Article 6: Consumer contracts" in: Ulrich Magnus and Peter Mankowski (eds), *Rome I Regulation - Commentary* (Verlag Dr. Otto Schmidt 2017), 474.

54 Bundesgerichtshof, Urteil vom 26. Oktober 2022 - XII ZR 89/21, para 14.; OLG Düsseldorf, Urteil vom 7. Oktober 2021 - 20 U 116/20, para 40.

State where the consumer has his/her habitual residence or domicile, or to several countries/Member States, including the country/Member State of the consumer's habitual residence or domicile. Directing activities should be understood as the professional's intention to do business with consumers in the country/Member State where the consumer has his/her habitual residence or domicile.[55] However, in the context of digitalisation and global accessibility of various communication and marketing channels, it is essential to emphasise that the mere availability of the professional's or his intermediary's website in the country/Member State where the consumer has his/her habitual residence or domicile does not necessarily mean that the professional's activity is genuinely directed at that country.[56] In the case of websites, if the professional's activity is presented on his website or that of his intermediary before concluding a contract with the consumer, and it is evident from such websites and the overall activity of the professional that he planned to do business with consumers who have their habitual residence or domicile in one or more countries/Member States, including the consumer's country/Member State, within the context of his intention to conclude contracts with them, the activity will still be deemed to be directed towards the country/Member State of the consumer.[57] In this regard, the CJEU has developed a set of indicative criteria to determine whether the professional directs his activity toward the country/Member State where the consumer has his/her habitual residence or domicile. As indicators of directing activity, among other things, the CJEU mentions the following: the international nature of the activity; the use of a language or currency not generally used in the country where the professional is established; the provision of telephone numbers with international codes; expenditure on internet referencing services to facilitate consumers from other countries access to the professional's or his intermediary's website; the use of a top-level domain name that is not the name of the country where the trader has his establishment; and mentioning an international clientele consisting of customers from different countries.[58] These indicators should be understood as non-exhaustive, and in assessing whether the professional directs his activity, it will be necessary to consider all relevant facts and

55 Pretelli (n 34) 226.

56 Joined Cases C-585/08 and C-144/09 *Peter Pammer v Reederei Karl Schlüter GmbH & Co KG* (C-585/08), and *Hotel Alpenhof GesmbH v Oliver Heller* (C-144/09) [2010] ECLI:EU:C:2010:740, para 94.

57 ibid, para 92.

58 ibid, para 83.

circumstances leading to the formation of a particular smart contract on a case-by-case basis.

It is possible to assume that there may be more challenges in characterising a legal relationship in the case of on-chain contracts based on public blockchains due to their widespread accessibility and the potential for transactions in the realm of anonymity, which complicates the overall evaluation of the case. On the other hand, in the case of on-chain smart contracts based on private blockchains, there should be fewer significant difficulties. This is because there are prerequisites that participants must meet, and the presence of a gatekeeper who verifies the performance of assumptions can provide more clarity and oversight in such cases.

D. International jurisdiction for disputes related to smart consumer contracts

The Brussels Ibis Regulation for consumer contracts prescribes special jurisdiction rules to protect consumers, who are considered the weaker party in contractual relationships, from a procedural and legal standpoint. However, when it comes to smart contracts based on blockchain technology, there is a significant obstacle to legal protection at the outset of the "smart contractual relationship." This particularly applies to public blockchain systems where the true identities of participants are unknown.[59] According to the national rules of civil procedure of EU Member States, a lawsuit must contain details about the defendant, including his name or legal entity name and address.[60] Consequently, if the identities of the contracting parties are unknown, and hence the passive legal standing can not be established, a court will not be able to determine its jurisdiction and, subsequently, apply conflict of law rules to determine the applicable law for smart consumer contracts. In the following discussion, matters of international jurisdiction for legal relationships related to smart consumer contracts will

59 European Law Institute (n 18) 23.

60 German Code of Civil Procedure as promulgated on 5 December 2005 (Bundesgesetzblatt (BGBl., Federal Law Gazette) I page 3202; 2006 I page 431; 2007 I page 1781), last amended by Article 1 of the Act dated 10 October 2013 (Federal Law Gazette I page 3786) and Book 10 last amended by Article 1 of the Act of 5 October 2021 (Federal Law Gazette I, p. 4607), arts 130 and 253; Croatian Civil Procedure Act, Official Gazette No 4/77, 36/77, 6/80, 36/80, 43/82, 69/82, 58/84, 74/87, 57/89, 20/90, 27/90, 35/91, 53/91, 91/92, 58/93, 112/99, 88/01, 117/03, 88/05, 02/07, 84/08, 96/08, 123/08, 57/11, 148/11, 25/13, 89/14, 70/19, 80/22, 114/22, arts 106 and 109.

be examined under the assumption that the identities of the contracting parties are known.

By the jurisdiction rules for consumer contracts, including smart contracts meeting the criteria to be characterised as consumer contracts, the rules are more favourable for the consumer than the professional party. In this regard, a consumer is entitled to initiate proceedings against a professional before the court of the Member State in which the professional is domiciled[61], or alternatively before the court for the place where the consumer is domiciled.[62] On the other hand, a professional is only allowed to bring legal proceedings against a consumer before the courts of the Member State where the consumer is domiciled.[63] In the context of blockchain-based smart contracts and the potential to engage in transactions with professionals across the world, from the perspective of a European consumer, it is important to note that consumers are further protected. Even if the professional does not have a domicile or branch within the EU, the consumer always has the option to initiate legal proceedings before the court for the place where the consumer is domiciled.[64]

Furthermore, Regulation Brussels Ibis allows parties, through mutual consent, to designate the competent court. However, the possibility of choosing a competent court is still significantly limited. The choice of court is only allowed in the following cases: if the choice of court agreement is concluded after the dispute has arisen; if it enables the consumer to bring proceedings before a court other than the courts that would usually have jurisdiction for consumer contracts; or if the agreement is concluded between a consumer and another contracting party, both of whom, at the time of the conclusion of the contract, have their domicile or habitual residence in the same Member State and by which jurisdiction is transferred to the courts of that Member State.[65]

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61 According to Articles 62 and 63 of the Brussels Ibis Regulation, the court applies its internal law (*lex fori*) when determining whether a party is domiciled in the Member State where the proceedings have been initiated. If the party does not have domicile in the Member State where the proceedings have been initiated, then, to determine whether the party is domiciled in another Member State, the court applies the law of that Member State. Legal persons are domiciled, where they have their statutory seat, central administration, or principal place of business.

62 Brussels Ibis Regulation, art 18(1).

63 Brussels Ibis Regulation, art 18(2).

64 Andrea Bonomi, "Jurisdiction over Consumer Contracts" in Andrew Dickinson and Eva Lein (eds), *The Brussels I Regulation Recast* (OUP 2015), 232.

65 Brussels Ibis Regulation, art 19.

At first glance, it could be more questionable how often choice of court agreements will be concluded in practice in the context of smart consumer contracts due to the limitations above. After a dispute arises, it is highly unlikely that parties, in the form of on-chain contracts, will conclude a choice of court agreement, which would then incur additional costs related to the developer who would need to write the jurisdictional clause into computer code. Additionally, it is uncertain how willing professionals are to agree to such arrangements, enabling consumers to file a lawsuit against them before a court other than the one that would have jurisdiction under protective rules. However, this does not mean that it is not worth analysing whether there is a possibility for the jurisdictional clause to be incorporated into a smart contract. Regarding off-chain smart contracts, there are no obstacles to including a choice of court provision in the underlying contract or in a separate agreement in natural language, provided the prerequisites laid out in the Brussels Ibis Regulation are met. However, the more challenging question is whether a choice of court agreement expressed solely in computer code, i.e., in an on-chain smart contract, can be considered valid.

Exclusively from a technological standpoint of smart contracts, incorporating a jurisdiction clause into an on-chain contract in the form of code is feasible.[66] This can be achieved using programming languages with Turing completeness, meaning they can compute anything.[67] The Brussels Ibis Regulation prescribes several alternative forms of jurisdiction agreements, while in this contribution, particular emphasis is on written agreements.[68] According to the Brussels Ibis Regulation, any communication through electronic means that enables a lasting record of the agreement is considered equivalent to the written form of the agreement.[69] From this, the Brussels Ibis Regulation holds a favourable view regarding the conclusion of jurisdiction agreements through information and communication technologies. Nevertheless, an open question remains concerning comprehending the meaning of a jurisdiction clause drafted in formal language by an average consumer. The CJEU takes the position that the invalidity of a jurisdiction clause cannot be established because it is not drafted

66 cf by analogy Simeona Kostova, *"Party Autonomy in a Modern Context: A Critical Analysis of its Scope under the Rome I Choice of Law Rules and Some Contemporary Considerations"* (University of Aberdeen, Working Paper Series 1/2023, 2023), 23-24.

67 ibid.

68 Brussels Ibis Regulation, art 25(1)(a).

69 Brussels Ibis Regulation, art 25(2).

in the language generally prescribed by the legal system of the Member State where the court decides on jurisdiction.[70] The Member States are not authorised to arbitrarily stipulate additional formal prerequisites for the validity of a jurisdiction clause about those specified in the Brussels Ibis Regulation. Consequently, a jurisdiction clause can be drafted in any language. Nevertheless, it is presumed that the CJEU had natural rather than formal language in mind at the time of its decision. Furthermore, according to Eurostat statistics on the computer skills of individuals, in 2021, only 5.82% of EU citizens wrote code in a programming language.[71] Although knowledge, skills, and experience in writing code over a specific period need not be entirely correlated, it is reasonable to assume that understanding code, or a formal language, is not a common skill among the average European consumer. However, as previously mentioned, the specific subjective knowledge of consumers is entirely irrelevant in determining a natural person as a consumer and, consequently, applying the EU PIL protective rules for consumer contracts.[72]

Therefore, in the case of on-chain smart contracts, a possible compromise solution might involve including a statement in the form of a non-executable comment in natural language within the code, explaining the meaning of the code and specifying that the code pertains to the jurisdiction clause.[73] However, it remains to be seen how comprehensible and unambiguous such comments within the overall code, even in natural language, would be to the average consumer within the complete context. This is especially relevant regarding the potential unfairness of such a smart contract provision, which will be discussed further in the part of this contribution concerning the choice of law clause.[74] In any case, when concluding jurisdiction agreements through electronic communication, including within on-chain smart contracts, it is essential to provide the consumer with the option to save and print the jurisdiction clause before entering into

70 Case C-150/80 *Elefanten Schuh GmbH v Jacqmain* [1981] ECR 1981-01671, para 27.

71 Eurostat, *"Individuals' level of computer skills (2021 onwards)"* (2023) <https://ec.europa.eu/eurostat/databrowser/view/isoc_sk_cskl_i21__custom_8255155/default/table?lang=en> accessed 10 October 2023.

72 Case C- 774/19 *A. B. and B. B. v Personal Exchange International Limited* [2020] ECLI:EU:C:2020:1015, para 38.

73 cf by analogy Law Commission (n 21) para 3.121.

74 See *infra* ch 5.1.

the contract to ensure a lasting record as evidence.[75] Therefore, until the courts establish a definitive standpoint for legal certainty and eliminate the possibility that the choice of jurisdiction clause could be deemed invalid, it would still be most appropriate to conclude the jurisdiction agreement entirely in the natural language outside the on-chain smart contract.

Continuing from the above, one may question the practical purpose of incorporating a jurisdiction clause into an on-chain contract. The segment of an on-chain smart contract containing a jurisdiction clause in the form of computer code, at least for now, could not be automatically executed because the courts exist outside the blockchain system.[76] In order to achieve judicial protection of the contracting parties in an on-chain consumer contract or to establish the jurisdiction of the chosen court, it will still be necessary to provide the court with a translation of the jurisdiction clause from formal language to natural language if it is composed solely in the form of code.[77] Therefore, the insistence of the contracting parties to include the jurisdiction clause in the on-chain contract as the main agreement may be motivated solely by the desire to incorporate substantive and procedural legal issues related to one legal relationship in one place.

Finally, one exception regarding the jurisdiction clause is worth noting. Hypothetically, if an on-chain consumer contract is void under the applicable law, this will not automatically result in the nullity of the jurisdiction clause contained in the on-chain contract as the main agreement. Based on the separability principle, the jurisdiction clause has a separate legal fate and is independent of the main contract in which it is contained.[78]

75 Case C- 322/14 *Jaouad El Majdoub v CarsOnTheWeb.Deutschland GmbH* [2015] ECLI:EU:C:2015:334, paras 32-36.

76 Georgina Garriga Suau, "Blockchain-based smart contracts and conflict rules for business-to-business operations" (2021) (41) Revista Electrónica de Estudios Internacionales 1, 21.

77 Jason Grant Allen, "Wrapped and Stacked: 'Smart Contracts' and the Interaction of Natural and Formal Language" in Jason Allen, and Peter Hunn (eds), *Smart Legal Contracts: Computable Law in Theory and Practice* (OUP 2022), 46.

78 Francisco Garcimartin, "Prorogation of Jurisdiction" in Andrew Dickinson and Eva Lein (eds), *The Brussels I Regulation Recast* (OUP 2015), 305.

E. Applicable law for smart consumer contracts

The rules of the Rome I Regulation on determining the applicable law for consumer contracts incorporate all three fundamental principles of EU PIL for contractual relationships: the principle of party autonomy, the principle of the closest connection, and, *per se*, the principle of protecting the weaker party.[79] The specific normative realisation of these principles will be explained further in this contribution, focusing on the concrete application of conflict of law rules in the context of smart contracts.

At the outset, clarifying a few fundamental concepts would be useful. By the Rome I Regulation, "applicable law" is defined as any law indicated by conflict of law rules, whether it is the law of a Member State or a third country.[80] The provision mentioned above embodies the principle of the universality of the applicable law, which is significant in the context of this contribution because, under certain assumptions, consumer contracts can be subject to the law of a third country. This is related to the subsequent application of substantive law, which may or may not provide consumers with the same level of protection as in EU Member States.[81] However, this will be elaborated on further in this contribution.

When we talk about the applicable law for a contract (*lex cause*), it is important to understand that this applicable law covers all issues related to the main rights and obligations arising from a specific contract, particularly the following: interpretation of the contract; performance; consequences of full or partial breach of obligations, including the assessment of damages; ways to discharge obligations and the prescription and limitation of actions; and the consequences of the nullity of the contract.[82] Given the scope of the applicable law, there is a fundamental distinction in determining the applicable law for on-chain and off-chain smart contracts. In the case of off-chain contracts, the object for determining the applicable law is the external contract concluded in natural language, and the applicable law

79 Davor Adrian Babić and Dora Zgrabljić Rotar, "Mjerodavno pravo za ugovorne odnose" in Tatjana Josipović (ed), *Privatno pravo Europske unije – Posebni dio* (Narodne novine 2022), 220.

80 Rome I Regulation, art 2.

81 Francesca Ragno, "The Law Applicable to Consumer Contracts under the Rome I Regulation" in Franco Ferrari and Stefan Leible (eds), *Rome I Regulation The Law Applicable to Contractual Obligations in Europe* (Sellier. European Law Publishers 2009), 136-137.

82 Rome I Regulation, art 12(1).

determined as such will, *inter alia*, cover issues related to the automated performance of the smart contract.[83] On the other hand, when we discuss the applicable law for on-chain contracts, where there is no external base contract in natural language, and the smart contract is formed and executed on the blockchain, the applicable law is determined concerning such on-chain contracts.

The Rome I Regulation distinguishes between subjective and objective applicable law in determining the applicable law for consumer contracts. Subjective applicable law for consumer contracts is the one the parties have chosen (*lex autonomiae*). However, despite the choice of applicable law, the Rome I Regulation stipulates that such a choice cannot deprive the consumer of the protection provided by mandatory provisions of the law that would have been applicable if no party choice had been made, i.e., the law of the state where the consumer has his/her habitual residence as the objectively applicable law (*lex residentiae habitualis*).[84]

When comparing the protective provisions of the Rome I Regulation for consumer contracts to other protective categories of contracts (such as transport contracts, individual employment contracts, or insurance contracts), it is evident that an escape clause is not provided for in the case of consumer contracts.[85] Typically, within the context of the contractual statute of the EU PIL, an escape clause allows a court to apply the law of another state that it deems to have a closer connection with the specific legal relationship instead of the law indicated by the conflict of laws rules.[86] The exclusion of the escape clause could be due to the European legislator's desire to ensure a stable and predictable connecting factor in the consumer's habitual residence in the context of consumer contracts. In the era of new digital technologies, when it is much easier to conclude consumer contracts with professionals worldwide, the absence of an escape clause contributes to consumer protection by removing potential uncertainty in determining the applicable law. It does so by consistently fixing the law of the state of the consumer's habitual residence as the objective law, which is considered reasonable because the professional typically conducts or directs his

83 Pedro de Miguel Asensio, *Conflict of Laws and the Internet* (Edward Elgar Publishing 2020), 427.

84 Rome I Regulation, art 6(1).

85 cf Rome I Regulation, arts 5, 6, 7 and 8.

86 Mirela Župan, *Načelo najbliže veze u hrvatskom i europskom međunarodnom privatnom ugovornom pravu* (Pravni fakultet u Rijeci 2007), 27.

commercial activities within the state of the consumer's habitual residence, objectively representing the *situs* of that legal relationship. However, in the context of on-chain smart contracts based on a public blockchain, when determining the consumer's habitual residence is indeed impossible; this leaves an open problem, as *Professor Rühl* notes.[87] In this case, the conflict of law rules for consumer contracts becomes entirely dysfunctional. This is because it is impossible to determine the consumer's habitual residence, and consequently, it is impossible to identify the objectively applicable law, which serves as the basic conflict of law rule for consumer contracts. As a result, it will not be possible to compare the chosen law's provisions with the objective law's mandatory provisions, ultimately representing a denial of consumer protection as the weaker party in the contract.

Finally, it is worth noting that specific conflict of law protective rules apply to all types of consumer contracts, except for contracts of carriage and insurance, for which there are also specific protective conflict of law rules. Applying these rules also excludes certain specific contracts.[88]

I. Choice of law *(lex autonomiae)*

Regarding the principle of party autonomy, a significant principle in contemporary private law, the European legislator, through Regulation Rome I, allows parties in consumer contracts to choose the applicable law for their

87 Giesela Rühl, "Smart (Legal) Contracts, or: Which (Contract) Law for Smart Contracts?" in Benedetta Cappiello and Gherardo Carullo (eds), *Blockchain, Law and Governance* (Springer 2020), 175-176.

88 According to the Rome I Regulation, art 6 paras (1) and (2) shall not apply to: a contract for the supply of services where the services are to be supplied to the consumer exclusively in a country other than that in which he has his habitual residence; a contract of carriage other than a contract relating to package travel within the meaning of Council Directive 90/314/EEC of 13 June 1990 on package travel, package holidays and package tours; a contract relating to a *right in rem* in immovable property or a tenancy of immovable property other than a contract relating to the right to use immovable properties on a timeshare basis within the meaning of Directive 94/47/EC; rights and obligations which constitute a financial instrument and rights and obligations constituting the terms and conditions governing the issuance or offer to the public and public take-over bids of transferable securities, and the subscription and redemption of units in collective investment undertakings in so far as these activities do not constitute provision of a financial service; a contract concluded within the type of system falling within the scope of art 4(1)(h) of the Rome I Regulation.

legal relationship.[89] However, certain limitations exist despite the general freedom to choose the applicable law. In order to protect consumers as the weaker party in the contract, Regulation Rome I stipulates that the party's choice of applicable law cannot deprive the consumer of the protection provided by the mandatory provisions of the law that would have been applicable had no choice of law been made, i.e., the law of the country in which the consumer has his/her habitual residence as the objectively applicable law.[90] In resolving disputes arising from consumer contracts, this requirement places an exceptionally complex task before the court. First, the court must determine the objectively applicable law, or the law that would be applicable had no choice of law been made, and accordingly, the mandatory rules from which no deviation is allowed by agreement.[91] Then, in the next step, the court compares the level of protection the consumer enjoys based on those rules with the level of protection provided by the chosen law.[92] If the chosen law offers better protection, it is applied. In the opposite situation, if the mandatory provisions of the objectively applicable law provide the consumer with greater protection, primarily, the mandatory provisions of that law are applied, and then, secondarily, the other provisions of the chosen law, resulting in a kind of "law mix".[93] The preceding becomes especially significant in the case of choosing the law of a third country and the global disparity in the level of consumer protection. Considering the nature of blockchain and the possibility of entering into off-chain and on-chain contracts with professionals worldwide, the principle of universalism from Regulation Rome I allows the application of the law of any country, regardless of whether it is the law of an EU Member State. However, despite the choice of third-country law, European substantive law imposes limitations in favour of the European consumer. According to the Unfair Consumer Contract Directive, Member States are required, in the case of a choice of third-country law, to take measures to prevent the consumers from losing the protection provided to them by this

89 Kunda, I., "Međunarodnoprivatnopravni odnosi", in: Mišćenić, E. (ed.), *Europsko privatno pravo: Posebni dio.*, Školska knjiga, Zagreb, 2021, pp. 523-524.

90 Rome I Regulation, art 6(1)(2).

91 cf by analogy Joined Cases C-152/20 and C-218/20 *DG and EH v SC Gruber Logistics SRL and Sindicatul Lucrătorilor din Transporturi v SC Samidani Trans SRL* [2021] ECLI:EU:C:2021:600, para 27.

92 ibid.

93 Rühl, "The Protection of Weaker Parties in the Private International Law of the European Union: A Portrait of Inconsistency and Conceptual Truancy" (n 35) 352-353.

Directive if the consumer contract is closely connected to an EU Member State. [94] The concrete implementation of this provision is carried out when the consumer has his/her habitual residence in an EU Member State, and the national court is obligated to apply those national rules through which the said Directive is transposed into the legal order of the Member State.[95]

Regarding the actual method of choosing the applicable law, Regulation Rome I allows for an express choice of law and an implied choice, i.e., a choice of law that clearly arises from the contract's terms or the case's circumstances.[96] Taking into account the characteristics of computer code, which aims to be precise and clear to eliminate ambiguity, it is likely that the criterion that an implied choice of law arises from the terms of the contract may not be applicable in the case of on-chain smart contracts.[97] However, this does not mean that the criterion of "circumstances of the case" cannot be met in the context of the choice of law for both types of smart contracts. In the case of off-chain contracts, there is certainly the possibility of an implied choice of law that arises from the terms of the contract, given that the underlying contract in natural language exists outside the blockchain. One of the strongest indications of an implied choice of law is often cited as the choice of a competent court.[98] This is significant because if the jurisdiction clause exists solely in the form of code if such a jurisdiction clause is deemed invalid, it cannot be concluded that the actual intention of the contracting parties was to subject the contract to the law of the country whose court's jurisdiction they invalidly chose. Other indicators of an implied choice of law include references in the contract to a specific law or specific provisions of a legal system and practices developed between the parties.[99] Facts such as the place of contract formation, using a specific language, contracting obligations in a particular currency, or the place of performance are not strong enough indicators to conclude an

94 Council Directive 93/13/EEC of 5 April 1993 on unfair terms in consumer contracts [1993] OJ L 95, art 6(2).

95 Case C-455/21 *OZ v Lyoness Europe AG* [2023] ECLI:EU:C:2023:455, para 45.

96 Rome I Regulation, art 3(1).

97 Suau (n 76) 24.

98 Francesco Ragno, "Article 3: Freedom of choice" in Ulrich Magnus and Peter Mankowski (eds), *Rome I Regulation - Commentary* (Verlag Dr. Otto Schmidt 2017), 98.

99 ibid 101-102.

implied choice of law. They should be considered in the context of other indicators.[100]

Unlike the assumptions for the formal validity of a choice of court agreement under Regulation Brussels Ibis, about the form of a choice of law agreement in the context of consumer contracts, Regulation Rome I does not require any specific form.[101] The choice of law agreement for off-chain smart contracts is relatively easy. Such an agreement can always be incorporated into an external base contract drafted in natural language.

However, as with the choice of court agreement, the same question arises about the choice of law, i.e., can parties incorporate a choice of law clause into an on-chain contract? Although there are no requirements regarding the form, an agreement on the choice of law drafted exclusively in code form would be unacceptable from the perspective of EU law. According to the CJEU's standpoint, a choice of law clause may be considered unfair if it has certain specific characteristics inherent in its content or context, thereby creating a significant imbalance between the rights and obligations of the parties.[102] In this sense, a provision that fails to meet the requirements of clarity and intelligibility is especially unfair.[103] According to the CJEU's standpoint, this requirement of transparency concerning the clarity and intelligibility of provisions is much broader than mere formal and grammatical intelligibility; it requires full awareness of consumers since they are the weaker party.[104] Therefore, in the case of on-chain smart contracts, a compromise solution similar to the choice of a court agreement would be to include a comment in natural language within the code that refers to the chosen law.[105] Alternatively, parties could conclude a separate choice of law agreement in natural language outside the on-chain contract, ultimately contributing to greater legal certainty for the contracting parties.

100 ibid 103.

101 Bea Verschraegen, "Article 11: Formal validity" in Ulrich Magnus and Peter Mankowski (eds), *Rome I Regulation - Commentary* (Verlag Dr. Otto Schmidt 2017), 706.

102 Case C-191/15 *Verein für Konsumenteninformation v Amazon EU Sàrl* [2016] ECLI:EU:C:2016:612, para 67.

103 ibid, para 68.

104 Case C-96/14 *Jean-Claude Van Hove v CNP Assurances SA* [2015] ECLI:EU:C:2015:262, para 40.

105 See *supra* ch 4.

II. The consumer's habitual residence *(lex residentiae habitualis)*

The habitual residence connecting factor implements the second foundational principle of EU PIL for contractual relationships, concretely operationalising the principle of the closest connection by establishing that a B2C transaction is most closely associated with the law of the consumer's habitual residence.[106] The application of the habitual residence connecting factor occurs in cases where there is no party's choice of applicable law or when such a choice is invalid. It also applies when a valid choice of applicable law exists, but the court is still obliged to consider the mandatory rules of the consumer's habitual residence and apply the law that offers the consumer greater protection.[107] Consequently, this conflict-of-law rule serves a dual purpose. It acts as a substitute in cases where no choice of law is made and functions as a control mechanism, ensuring that, when a choice of law exists, the mandatory provisions of the country where the consumer has his/her habitual residence that provide greater consumer protection prevail.

In the context of smart contracts, the question arises concerning the relevance of the timing for determining the consumer's habitual residence. In this regard, the relevant moment for establishing the consumer's habitual residence is at the time of contract formation, and subsequent changes in the consumer's habitual residence are irrelevant.[108] The habitual residence connecting factor will play a decisive role in recognising the legal effects of smart consumer contracts. For general contracts under the Rome I Regulation, which do not fall into the protective categories of contracts, the recommendation is that the parties should always choose a law in favour of a country that recognises the legal effects of smart contracts.[109] However, in the case of consumer contracts, the situation is the opposite. Given the significance of the consumer's habitual residence as an objective connecting factor, which simultaneously provides control for consumer protection about the potentially chosen law, in the context of smart consumer contracts, the parties should first consider the mandatory rules of the country where the consumer has his/her habitual residence before choosing applicable law. Although these rules are designed to protect consumers as

106 Kunda (n 89) 512-513.
107 ibid 537.
108 Rome I Regulation, art 19(3).
109 De Lima Pinheiro (n 33) 24.

the weaker party in contracts, it is possible to assume that the complexity of determining the applicable law and the subsequent consideration of a variety of national contract law rules, depending on the habitual residence of each consumer, may lead to hesitation for some professionals in the broader application of smart contracts in internationally-marked consumer transactions.[110]

III. Consent and material validity of smart consumer contracts

When discussing consent and the substantive validity of smart consumer contracts, it is important to understand these concepts broadly. The applicable law for consent and the substantive validity of contracts covers various issues such as the agreement of the contracting parties, the existence of a valid object of the contract, the presence of *causa*, the effects of contract proposals and acceptance deadlines, questions regarding late acceptance, and the existence and scope of the right to terminate the contract.[111] Determining the applicable law for consent and the substantive validity of on-chain smart and off-chain contracts is crucial because these contracts are essentially concluded at a distance. Legal systems concerning distance contracts provide different rules for determining when a contract is concluded and from which point an acceptance produces legal effects.[112] Moreover, considering the previously explained way of forming on-chain smart contracts by posting an offer in the form of code on the blockchain, this conflict of laws rule is important in the context of assessing the existence of the on-chain smart contract itself, especially regarding questions related to the substantive assumptions of an offer made through electronic communication.[113] According to the Rome I Regulation, the existence and material validity of a contract, or any contract provision, are determined according to the law that would be applicable under the Rome I Regulation if the

110 Rühl, "Smart (Legal) Contracts, or: Which (Contract) Law for Smart Contracts?" (n 87) 175.

111 Suau (n 76) 16; Ilaria Queirolo, "Article 10: Consent and material validity" in Ulrich Magnus and Peter Mankowski (eds), *Rome I Regulation - Commentary* (Verlag Dr. Otto Schmidt 2017), 663.

112 De Miguel Asensio (n 83) 474.

113 Franco Ferrari and Jan A. Bischoff, "Article 10 Consent and material validity" in Franco Ferrari (ed), *Rome I Regulation: Pocket Commentary* (Sellier. European Law Publishers 2015), 359.

contract or its provision were valid.[114] The applicable law is determined by the presumption that the contract is valid to establish the applicable law for that contract. In the subsequent step, based on the identified applicable law, the existence or validity of the contract is assessed.[115] In the specific case of smart consumer contracts, both on-chain and off-chain, the practical application of this conflict of laws rules for consent and material validity will generally lead to applying the law of the consumer's habitual residence as the objective applicable law. This should be applied even if the parties have chosen the applicable law, provided that the mandatory rules of the objective applicable law offer the consumer a higher level of protection regarding the consent assumptions and material validity of the contract.

IV. Formal validity of smart consumer contracts

In EU PIL, formal validity is construed as any external expression by a contractual party by which the party manifests the intention to create legal obligations.[116] Generally, formal validity pertains to rules that mandate a specific form of contracting for certain agreements, such as written form, or even involving public authorities like courts or notaries.[117] However, although such contracts are likely a minority due to the particularities of on-chain smart contracts, careful attention will be required concerning the formal validity rules under the applicable law. Specifically, regarding the formal validity of consumer contracts, the Rome I Regulation stipulates that the applicable law is the law of the state where the consumer has his/her habitual residence.[118] The following fact underscores the significance of the formal validity of consumer contracts for consumer protection. The Rome I Regulation, in the case of contracts concluded at a distance through a range of alternative provisions, promotes the principle *in favorem validitatis*, all to preserve the formal validity of contracts by applying one of the offered alternative connecting factors. Nevertheless, for the formal validity of consumer contracts, the exclusive application of the law of the state where the consumer has his/her habitual residence is prescribed.

114 Rome I Regulation, art 10(1).
115 Queirolo, "Article 10: Consent and material validity" (n 111) 663 and 666.
116 Verschraegen (n 101) 694.
117 ibid.
118 Rome I Regulation, art 11(4).

In light of the preceding, the question arises as to what legal consequences may arise in the event of a discrepancy between the law chosen by the parties for a smart contract (*lex causae*) and the law applicable to the formal validity of the smart contract. For instance, in the case of an on-chain smart contract, the law of State A is chosen by the contractual parties as the applicable law for the main rights and obligations (*lex causae*), while according to Article 11(4) of the Rome I Regulation, the law of State B, where the consumer has his/her habitual residence, is exclusively applicable to the formal validity of the on-chain smart contract. This is important because if national law prescribes formalities for certain types of contracts by means of mandatory rules, deviating from the prescribed form may result in the nullity of the contract in certain legal systems.[119] In the aforementioned hypothetical scenario, the on-chain smart contract could formally be void under the law of country B, while the consequences of any nullity would be assessed according to the chosen law of country A (*lex causae*).[120] Although the possibility of a discrepancy is evident, inappropriate results in applying *lex causae* and the law applicable to the formal validity of the contract should not occur. Since the goal of every legal transaction should be to satisfy the interests of each contracting party in a legally permissible manner, the contractual parties, especially the professional, should carefully consider the mandatory rules of the state of the consumer's habitual residence before forming an on-chain smart contract. This is because rules regarding the form of a contract or formal validity in national laws are closely linked to the mandatory rules of substantive law.[121] The prescribed form of a particular transaction always aims, *inter alia*, to provide a higher level of legal certainty and protection among the parties in terms of proving the existence of a legal relationship. Therefore, when considering the mandatory provisions of the law of the state of the consumer's habitual residence, which must always be taken into account as objective applicable law when providing the consumer with a higher level of protection, the parties will generally be informed about the prescribed formal prerequisites for a specific transaction. Finally, if *lex causae* is not

119 German Civil Code in the version promulgated on 2 January 2002 (Federal Law Gazette [Bundesgesetzblatt] I page 42, 2909; 2003 I page 738), last amended by Article 1 of the Act of 10 August 2021 (Federal Law Gazette I p. 3515), art 125; Croatian Civil Obligations Act, Official Gazette No 35/05, 41/08, 125/11, 78/15, 29/18, 126/21, 114/22, 156/22, art 290(1).

120 Rome I Regulation, art 12(1)(e).

121 Verschraegen (n 101) 705.

the law of the consumer's habitual residence, applying the mandatory rules of the state of the consumer's habitual residence is always guaranteed to the consumer if they provide a higher level of protection regarding the consequences of any nullity of the transaction.

In the context of off-chain smart contracts, a specific smart contract will not be the subject of assessing formal validity; instead, it will be the external underlying contract concluded off the blockchain in natural language. The off-chain smart contract's function is solely the automatic performance of obligations, which falls within the scope of *lex causae*.[122]

According to the common understanding, smart contracts are suitable for any transaction, even for transferring real-world assets, including tangible assets such as movables and immovables.[123] However, although from a technological perspective, smart contracts could support the transfer of real property rights, in the actual implementation of the transaction concerning public authorities, there would likely be difficulties since existing national rules often require a written form and the fulfilment of additional prerequisites for registration in the land registry.[124] Without delving into further substantive considerations, it is necessary to draw attention to one exception. Namely, for the main rights and obligations arising from contracts related to rights *in rem* and lease agreements, the protective conflict of laws rules for consumer contracts do not apply.[125] Therefore, a similar exception is prescribed concerning determining the applicable law for the formal validity of such contracts. In the case of these contracts, formal validity is assessed according to the law of the state where the real property is located (*lex rei sitae*), regardless of whether the legal relationship would otherwise objectively meet the conditions for the existence of a consumer contract.[126]

V. (In)capacity of the consumer

Finally, in the discussion regarding issues related to determining the applicable law, attention should be drawn to the risk arising from how primarily

122 Rome I Regulation, art 12(1).
123 Rühl, "Smart (Legal) Contracts, or: Which (Contract) Law for Smart Contracts?" (n 87) 160.
124 Gliha and Marković (n 29) 173.
125 Rome I Regulation, art 6(4)(c).
126 Rome I Regulation, art 11(5).

on-chain smart contracts are formed, which can also apply to off-chain contracts when the base contract in natural language is concluded at a distance. Public blockchain platforms generally do not verify the legal capacity of participants, so a minor or another legally incapacitated person can open a user account and act as a consumer.[127] The specific risk lies in the fact that, according to the substantive law of certain legal systems, binding a legally incapacitated or limited legal capacity person can result in the nullity of the legal transaction.[128]

In principle, questions of legal and business capacity are excluded from the scope of the Rome I Regulation.[129] However, exceptionally, the Rome I Regulation provides that in the case of contracts concluded by persons in the same country, a natural person who, under the law of that country, would have legal and business capacity may invoke the legal incapacity resulting from the law of another country, only if the other contracting party knew of this incapacity at the time of conclusion of the contract, or did not know due to negligence.[130] Although the scope of this provision is narrowed down by a set of criteria, in the context of on-chain smart contracts, the application of this provision will be almost impossible. Namely, from the first criterion that requires the presence of both contracting parties at the time of the contract conclusion in the same country, it is evident that it is highly unlikely to apply the provision about the contracting parties of on-chain contracts from different countries.[131] A similar situation arises in the case of off-chain contracts concluded at a distance in natural language, while the smart contract performs the obligation. Therefore, the determination of the consumer's legal (in)capacity will be governed by national PIL rules, which usually prescribe that the legal capacity of a natural person is determined by the law of citizenship, the law of residence, or the law of the place where the contract was concluded, or the *lex causae*.[132] The consequences of the

127 Đurović and Janssen (n 25) 71; Law Commission (n 21) para 3.24.

128 German Civil Code in the version promulgated on 2 January 2002 (Federal Law Gazette [Bundesgesetzblatt] I page 42, 2909; 2003 I page 738), last amended by Article 1 of the Act of 10 August 2021 (Federal Law Gazette I p. 3515), arts 104 and 105; Croatian Civil Obligations Act, Official Gazette No 35/05, 41/08, 125/11, 78/15, 29/18, 126/21, 114/22, 156/22, arts 276(3) and 330.

129 Rome I Regulation, art 1(2)(a).

130 Rome I Regulation, art 13.

131 Ilaria Queirolo, "Article 13: Incapacity" in Ulrich Magnus and Peter Mankowski (eds), *Rome I Regulation - Commentary* (Verlag Dr. Otto Schmidt 2017), 746.

132 De Miguel Asensio (n 83) 475.

potential nullity of the contract due to the consumer's legal incapacity will be assessed by the *lex causae*.[133]

F. Concluding remarks

From the previously presented contribution, it is evident that the rules of EU PIL for contractual obligations can adequately respond to technological innovations such as smart contracts. Concerning both fundamental types of smart contracts, it is possible to characterise them in terms of "contractual obligations," or "civil and commercial matters," which is a *conditio sine qua non* for applying EU PIL instruments for contractual obligations. Regarding the applicability of existing rules for determining international jurisdiction and the applicable law for legal relationships related to smart consumer contracts, European consumers are in a favourable position, even when entering into legal relationships with professionals from third countries. This favorability arises from two fundamental aspects. Consumers are always entitled to initiate proceedings against a professional before the court of the place where the consumer has his/her domicile, and the existence of a controlling mechanism, the connecting factor of the consumer's habitual residence in the case of a choice of law, ensures that the consumers are always protected by the mandatory rules of the state where they have their habitual residence unless the chosen law provides a higher level of protection.

In light of the above, for legal certainty and the validity of the legal transaction, it would be advisable for the contracting parties, especially the professional, to thoroughly consider the mandatory rules of objectively applicable law. This is done to prevent the legal transaction from conflicting with the mandatory rules of the law of the state where the consumer has his/her habitual residence. Concerning on-chain smart contracts, particular attention should be paid to the rules of the applicable law for the formal validity of the contract, which is assessed solely according to the law of the state where the consumer has his/her habitual residence.

Finally, looking at the broader context of consumer protection, not only from the perspective of EU PIL, it can be concluded that a significant source of vulnerability for consumers in the realisation of consumer rights lies in smart contracts based on public blockchains, i.e. smart contracts in

133 Rome I Regulation, art 12(1)(e).

which the actual identity of the professional is difficult to ascertain, and in the end, possibly permanently unknown. In such cases, consumers would usually be denied legal protection, as it would be impossible to name a specific professional as the defendant in a potential dispute. Consequently, the court will not be able to apply the applicable law. Therefore, stakeholders in consumer protection and policymakers must raise consumer awareness of two fundamental things. First, every private law relationship, even one conducted through modern technologies such as blockchain, is subject to a certain legal order. Second, by entering into a transaction with a professional of unknown identity, consumers risk being deprived of the useful protection the legal system provides as the weaker contractual party.